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EXAMINER
NGUYEN, QUANG N

ART UNIT	PAPER NUMBER
2141	

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>03 July 2006</u>.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-9,11-19 and 21-26* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-9,11-19 and 21-26* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *18 February 2004* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____.

       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>20060703</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Detailed Action

1.   This Office Action is in response to the Amendment filed on 07/03/2006. Claims

1, 11 and 23-24 have been amended. Claims 10 and 20 have been cancelled. Claims

1-9, 11-19 and 21-26 remain pending.

Information Disclosure Statement

2.   The information disclosure statement (IDS) submitted on 07/03/2006 is in

compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure

statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art
> are such that the subject matter as a whole would have been obvious at the time the invention was made to
> a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be
> negatived by the manner in which the invention was made.

4.   **Claims 1-5 and 25 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Tsirtsis (US 2004/0148428 A1), in view of Ng et al. (US

2006/0062214 A1), hereinafter "Ng".

5.   As to claim 1, **Tsirtsis** discloses a method and system for supporting Mobile IP

management in a communications system, comprising:

receiving a first care-of-address for a first mobile node *(when a mobile node visits*

a foreign network, its temporary local address or care of address is registered back with

the home agent node 550) **(Tsirtsis, Fig. 5 and paragraphs [0004] and [0037])**;

detecting a mobile access agent having knowledge of said first care-of-address

(home agent node 550 detecting the access node 540 having knowledge of the mobile

node's care of address via the message 513) **(Tsirtsis, paragraph [0037])**;

determining, based upon at least one condition, that the mobile access agent is

configured to perform local routing of at least one datagram from the first mobile node to

a second mobile node that has a second care-of address that is known to the mobile

access agent, without the at least one datagram being tunneled through a mobility

server *(based on the addresses of directly connected nodes to the mobile access*

agent/node 300 stored in its state information 310 as illustrated in Fig. 3, its mobility

agent module 302 can perform local routing between the end mobile node 9 and the

end mobile node X directly connected to access node 300 via a wireless link) **(Tsirtsis,**

Fig. 3 and paragraphs [0027 - 0028]); and

instructing said mobile access agent to perform local routing of at least one

datagram between said first mobile node and the second mobile node *(since state*

information 310 contains both end node 9 and end node X Home Address States 322

and 324, indicating end nodes 9 and X directly connected to the mobile access

agent/node 300, hence, the mobile access agent/node 300 can perform local routing

between end node 9 and end node X via a wireless link using the mobility agent module

302) **(Tsirtsis, paragraphs [0027 - 0028])**.

However, **Tsirtsis** does not explicitly disclose the mobile access agent is a mobile router being capable of changing its point of attachment within or between networks, wherein the mobile router is configured to perform local routing without the at least one datagram being tunneled through a mobility server.

In an analogous art, **Ng** discloses a mobile router, being capable of changing its point of attachment within or between networks **(Ng, paragraph [0004])**, intercepts a packet transmitted to one mobile node connected to the mobile router in a local mobile network, wherein in order to avoid the ingress filtering, the mobile node fills its care-of-address in the source address of the packet and inserts its home-address as special information in the packet header. Upon interception of the packet by the mobile router, the mobile router checks whether its termination address matches its home-address or its care-of-address. In a case where the termination address is a valid address in the local mobile network connected to the mobile router *(i.e., when the termination address is the second care-of-address of the second mobile node connected to the mobile router)*, the packet is forwarded to its destination **(Ng, paragraph [0067 – 0068)**. In addition, **Ng** also discloses all packets from the local network intercepted by the mobile router are forwarded to its destination by default without the necessity to tunnel the packet to the home agent, i.e., to the mobility server **(Ng, paragraphs [0072 – 0075])**.

Therefore, it would have been obvious to one having ordinary skill in the Data Processing Art at the time of the invention to incorporate the feature of the mobile router is configured to perform local routing without the at least one datagram being tunneled

through a mobility server, as disclosed by **Ng**, into the teaching of **Tsirtsis**, since both references are directed to performing traffic routing in a mobile communications network, hence, would be considered to be analogous based on their related fields of endeavor. One would be motivated to do so to deliver a packet to a mobile node connected to a mobile router in a local mobile network without passing through a home agent of the mobile node and an access router, thereby decreasing delivery latency **(Ng, paragraph [0072], lines 1-4)**.

6.   As to claim 2, **Tsirtsis-Ng** discloses the method of claim 1, wherein said method is implemented using standard mobile Internet Protocol *(Mobile IPv4 and/or IPv6)*.

7.   As to claim 3, **Tsirtsis-Ng** discloses the method of claim 1, wherein said first care-of-address is included in a registration request from said first mobile node *(end node X 962 registers the address associated with a foreign agent as a care-of-address with its home agent 130 in its home network 128)* **(Tsirtsis, Fig. 1 and paragraph [0021] and Ng, paragraph [0006])**.

8.   As to claim 4, **Tsirtsis-Ng** discloses the method of claim 1, wherein said mobile router is instructed to perform local routing via a registration reply responsive to said registration request *(i.e., detecting that the access node 300 includes the mobility agent module 302 that supports end node mobility and connectivity management services capable of providing node mobility, session establishment, and session maintenance services to connected end nodes, i.e., to perform local routing for end node 9 and end*

node X directly connected to the access node 300 with Home Address States 322 and

324 contained in its State Information 310) **(Tsirtsis, paragraphs [0027-0028])**.

9.   As to claim 5, **Tsirtsis-Ng** discloses the method of claim 1, wherein said at least

one condition includes at least one of detecting that said mobile router is configured for

performing local routing; and detecting a need for local routing for said first mobile node

(i.e., detecting that the foreign agent 300 includes the mobility agent module 302 that

supports end node mobility and connectivity management services capable of providing

node mobility, session establishment, and session maintenance services to connected

end nodes) **(Tsirtsis, paragraphs [0027-0028])**.

10.   As to claim 25, **Tsirtsis-Ng** discloses a mobility server configured for performing

the method of claim 1 **(Tsirtsis, home agent node 550 as in Fig. 5)**.

**11.   Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Tsirtsis, in view of Ng, and further in view of Perkins et al. (Route Optimization in
Mobile IP), hereafter referred as Perkins.**

12.   As to claims 6-7, **Tsirtsis-Ng** discloses the method of claim 1, but does not

explicitly disclose detecting at least one change in local routing for said first mobile

node; and notifying (communicating to) said edge mobility agent of said at least one

change in local routing for said first mobile node.

In an analogous art, **Perkins** discloses a system and method for route optimization in Mobile IP, wherein a mobile node receives a new Care-of-Address when it roams to a new access point, it MAY send a Binding Warning message to its Home Agent (i.e., *detecting at least one change in local routing for said first mobile node*) requesting that the home agent send Binding Update messages to one or more correspondent nodes including the previous foreign agent for notification of the mobile node's current mobility binding *(i.e., notifying said edge mobility agent of .said at least one change in local routing for said first mobile node)* **(Perkins, Sections 4.1 and 4.3)**.

Therefore it would have been obvious to one having ordinary skill in the Data Processing Art at the time the invention was made to incorporate the feature of detecting at least one change in local routing for said first mobile node; and notifying (communicating to) said edge mobility agent of said at least one change in local routing for said first mobile node, as disclosed by **Perkins**, into the teachings of **Tsirtsis-Ng**, since both references are directed to performing traffic routing in a mobile communications network, hence, would be considered to be analogous based on their related fields of endeavor. One would be motivated to do so to notify the correspondent nodes of the new binding information so that they also can update their binding for the mobile node to allow datagrams in flight to the mobile node's previous foreign agent to be forwarded to its new care-of-address.

13.   As to claim 8, **Tsirtsis-Ng-Perkins** discloses the method of claim 7, wherein said at least one change in local routing is based on a new first care-of-address for said first mobile node *(when the mobile node receives a new Care-of-Address, it MAY send*

a Binding Warning message to its previous Home Agent) **(Perkins, Section 4.1)**. The same motivations regarding the obviousness of claims 6-7 also apply to claim 8.

14.   Claims 11-19, 21-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thubert et al. (US 2004/0246931 A1), hereinafter "Thubert", in view of Ng.

15.   As to claim 11, **Thubert** discloses a method for local routing between two mobile nodes comprising the steps of:

receiving in a mobile router an indication of a first care-of-address for a first mobile node, the mobile router supporting a mobile network and further being capable of changing its point of attachment within or between networks *(the Top Level Mobile Router TLMR 30a detects the registration request from the originating mobile host/router 30c and stores in its routing table 64 the care-of-address 36c of the originating mobile host/router 30c)* **(Thubert, Fig. 1 and paragraphs [0005] and [0044])**.

However, **Thubert** does not explicitly disclose determining, based upon at least one condition, that the mobile router is configured to perform local routing of at least one datagram from the first mobile node to a second mobile node that has a second care-of-address that is known to the mobile router without the at least one datagram being tunneled through a mobility server.

In an analogous art, **Ng** discloses a mobile router, being capable of changing its point of attachment within or between networks **(Ng, paragraph [0004])**, intercepts a

packet transmitted to one mobile node connected to the mobile router in a local mobile network, wherein in order to avoid the ingress filtering, the mobile node fills its care-of-address in the source address of the packet and inserts its home-address as special information in the packet header. Upon interception of the packet by the mobile router, the mobile router checks whether its termination address matches its home-address or its care-of-address. In a case where the termination address is a valid address in the local mobile network connected to the mobile router *(i.e., when the termination address is the second care-of-address of the second mobile node connected to the mobile router)*, the packet is forwarded to its destination **(Ng, paragraph [0067 – 0068)**. In addition, **Ng** also discloses all packets from the local network intercepted by the mobile router are forwarded to its destination by default without the necessity to tunnel the packet to the home agent **(Ng, paragraphs [0072 – 0075])**.

Therefore, it would have been obvious to one having ordinary skill in the Data Processing Art at the time of the invention to incorporate the feature of the mobile router is configured to perform local routing without the at least one datagram being tunneled through a mobility server, as disclosed by **Ng**, into the teaching of **Thubert**, since their references are directed to performing traffic routing in a mobile communications network, hence, would be considered to be analogous based on their related fields of endeavor. One would be motivated to do so to deliver a packet to a mobile node connected to a mobile router in a local mobile network without passing through a home agent of the mobile node and an access router, thereby decreasing delivery latency **(Ng, paragraph [0072], lines 1-4)**.

16.   As to claim 12, **Thubert-Ng** discloses the method of claim 11, wherein said

method is implemented using standard mobile Internet protocol *(Mobile IPv4 and/or*

IPv6) **(Thubert, paragraph [0030])**.

17.   Claim 13 recites substantially the same limitations as claim 4; therefore, it is

rejected under the same rationale.

18.   As to claim 14, **Thubert-Ng** discloses the method of claim 11, wherein said

determination that local routing can be performed is made by said mobile router *(in a*

case where the termination address is a valid address in the local area network

connected to the mobile router, i.e., the termination address is the second care-of-

address of the second mobile node on the local area network, the packet is forwarded

to its destination by the intercepting mobile router) **(Ng, paragraph [0067 – 0068)**. The

same motivations regarding the obviousness of claims 11 also apply to claim 14.

19.   As to claim 15, **Thubert-Ng** discloses the method of claim 11, wherein said at

least one condition includes detecting a need for local routing for said first mobile node

(if the termination address is a valid address in the local area network connected to the

mobile router, i.e., the termination address is the second care-of-address of the second

mobile node on the local area network, the packet is forwarded to its destination by the

intercepting mobile router) **(Ng, paragraph [0067 – 0068)**. The same motivations

regarding the obviousness of claims 11 also apply to claim 15.

20.   As to claim 16, **Thubert-Ng** discloses the method of claim 11 further comprising performing local routing for said mobile node *(if the termination address is a valid address in the local area network connected to the mobile router, i.e., the termination address is the second care-of-address of the second mobile node on the local area network, the packet is forwarded to its destination)* **(Ng, paragraph [0067 – 0068)**. The same motivations regarding the obviousness of claims 11 also apply to claim 16.

21.   As to claim 17, **Thubert-Ng** discloses the method of claim 16, wherein said step of performing local routing includes adding said first mobile node to a local routing list *(the Top Level Mobile Router TLMR detects the registration request from the originating mobile host/router 30c and <u>stores in its routing table 64 the care-of-address 36c of the originating mobile host/router 30c</u>)* **(Thubert, Fig. 1 and paragraph [0044])**.

22.   Claim 18 recites substantially the same limitations as claim 11; therefore, it is rejected under the same rationale.

23.   Claims 19 and 21 recite substantially the same limitations as claim 7; therefore, it is rejected under the same rationale.

24.   As to claim 22, **Thubert-Ng** discloses the method of claim 21, wherein said mobility server is a home agent **(Thubert, home agent 14a as in Fig. 1)**.

25.   As to claim 26, **Thubert-Ng** discloses a mobile router configured for performing the method of claim 11 **(Thubert, Top Level Mobile Router 30a as in Fig. 1)**.

26.   Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thubert, in view of Ng and further in view of Leung (US 6,636,498).

27.   As to claim 23, **Thubert-Ng** discloses the method for local routing between two mobile nodes as in method claim 11, but does not explicitly disclose the additional step of notifying a home agent that local routing of at least one datagram can be performed by the mobile router between said first mobile node and the second mobile node.

In an analogous art, **Leung** discloses a method and system for implementing a Mobile IP mobile router, wherein when the mobile router moves to a new geographic location, it constructs a registration request and registers with its Home Agent *(i.e., notifying its home agent)* via a care-of-address. Upon receiving of the registration request *(i.e., upon receiving the notification)*, the Home Agent verifies authentication of the registration request and updates the appropriate routing tables. From the registration packet and information easily accessible to the Home Agent, the Home Agent registers the care-of-address for the network(s) serviced by the registered mobile router *(i.e., since the mobile nodes/hosts serviced by the mobile router have the same prescribed mobile network prefix with the care-of-address of the mobile router, local routing can be performed by the mobile router)* **(Leung, col. 5, lines 32-44)**.

Therefore, it would have been obvious to one of ordinary skill in the Data Processing Art at the time of the invention to incorporate the feature of notifying a home agent that local routing of at least one datagram can be performed by the mobile router between said first mobile node and the second mobile node, as disclosed by **Leung**, into the teachings of **Thubert-Ng**, since their references are directed to performing traffic routing in a mobile communications network using a mobile router, hence, would be considered to be analogous based on their related fields of endeavor. One would be motivated to do so to eliminate the necessity for the Home Agent to separately track each mobile node associated with the mobile router **(Leung, col. 5, lines 44-45)**.

28. Claim 24 recites substantially the same limitations as claim 23; therefore, it is rejected under the same rationale.

Allowable Subject Matter

29. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

30.   Applicant's arguments as well as request for reconsideration filed on 07/03/2006

have been fully considered but they are not deemed to be persuasive.

31.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action.   Accordingly, **THIS ACTION IS MADE FINAL**.   See MPEP

§ 706.07(a).   Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action.   In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action.   In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

32.   Further references of interest are cited on Form PTO-892, which is an

attachment to this Office Action.

33.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Nguyen whose telephone number is (571) 272-3886.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's SPE, Rupal Dharia, can be reached at (571) 272-3880. The fax phone number for the organization is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.   Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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